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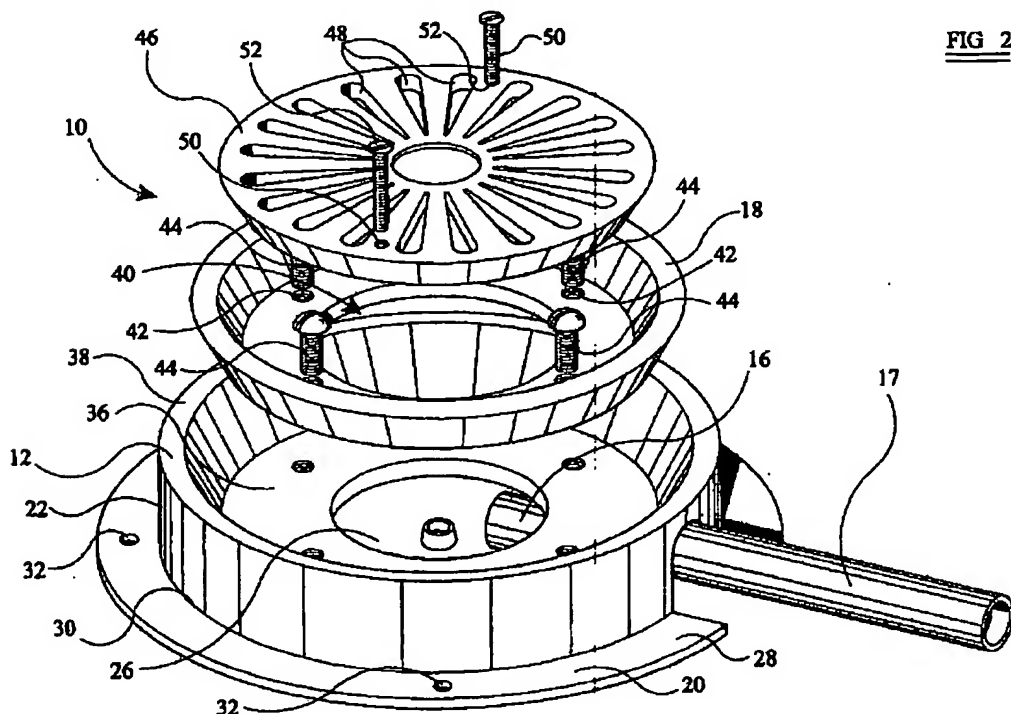
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(54) **Pumped trap and method of installing same**

(57) A pumped trap 10 comprises a sump 12, a waste water inlet 14 through which waste water enters the sump 12, a waste water outlet 16, a pump for drawing at least a portion of the said waste water from the sump 12 through the waste water outlet 16, securing

means by which a water resistant floor covering material can be clamped to the trap, and one or more fixing elements 20 by which the trap 10, in use, can be secured to a floor. A method for installing the trap 10 is also described.



**FIG 2**

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**Description**

[0001] This invention relates to a pumped trap, in particular for fixing to a screed covered floor and to which a water resistant floor covering material can be clamped, and to a method of installing such a pumped trap.

[0002] Recently, the use of 'wet-floor' type floor coverings has grown in popularity. These typically make use of Altro™, or some other type of stiff plastics material, which can be cold welded to provide a seamless and water-resistant floor covering.

[0003] This type of flooring is especially useful in bathrooms for the disabled, invalid or infirm who are largely unable to negotiate stepping into and out of a bath or shower tray. By having a water resistant floor covering laid in the bathroom, a shower chair or wheelchair can simply be placed beneath the shower head, and showering can commence without being overly concerned with splash or spray. To enable suitable draining, the water-resistant floor covering is provided with a fall that acts to channel the run-off water to a drain formed in the flooring.

[0004] A problem associated with the installation of a seamless water resistant floor covering occurs when attempting to accommodate a suitable trap for drainage within the existing floor. Often, a trap requires a relatively significant depth of floor to enable installation, and an opening has to be formed in the floor in which the trap can be positioned. The formation of an opening can often be troublesome, especially when the floor is concrete. If the floor is screed covered, the opening has to be formed in both the screed and the concrete floor.

[0005] A further difficulty arises during installation as often a former is laid by which a fall is generated running towards the trap. The former has to be suitably supported and its edges have to be coplanar with the rest of the floor to provide a level-entry type access. The use of a former increases costs and its installation involves it being recessed into the floor, which is troublesome with any type of flooring. If a screed covered concrete floor is present, screed has to be removed and then re-formed around the former.

[0006] The present invention seeks to overcome the problem of installing a trap in or on a screed covered concrete floor.

[0007] According to a first aspect of the present invention, there is provided a pumped trap for fixing to a floor which includes a screed covering and to which a water resistant floor covering material can be attached, the trap comprising a sump, a waste water inlet through which waste water enters the sump, a waste water outlet, a pump for drawing at least a portion of the said waste water from the sump through the waste water outlet, means for securing the floor covering material to the trap, and one or more fixing elements by which the trap, in use, can be secured to the floor.

[0008] Preferable and/or optional features of the first

aspect of the present invention are set out in claims 2 to 9, inclusive.

[0009] According to a second aspect of the present invention, there is provided a pumped trap in accordance with the first aspect of the present invention in combination with a floor covering material, the floor covering material being cold weldable to produce a seamless and water resistant covering.

[0010] According to a third aspect of the present invention, there is provided a method for installing a pumped trap as claimed in any one of the preceding claims in a floor having a screed covering, the method comprising the steps of:

- a) removing screed to a depth sufficient to receive the pumped trap,
- b) installing the pumped trap in the opening created by the removal of the screed in step (a), and
- c) re-forming the screed covering.

[0011] Preferable and/or optional features of the third aspect of the present invention are set out in claims 11 to 14, inclusive.

[0012] The invention will now be more particularly described, by way of example, with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view from above of one embodiment of a pumped trap, in accordance with the present invention;

Figure 2 is an exploded perspective view of the pumped trap shown in Figure 1;

Figure 3 is a side sectional view of the pumped trap shown in Figure 1;

Figure 4 is a perspective view from beneath of the pumped trap shown in Figure 1; and

Figure 5 is a side sectional view of the pumped trap shown in Figure 1, when in use.

[0013] Referring to the drawings, a pumped trap 10, which is typically injection moulded from plastics material, is shown therein and comprises a sump 12, a waste water inlet 14, a waste water outlet 16, a pump (not shown), means for securing a water resistant floor covering material to the trap 10, and a fixing element 20.

[0014] The sump 12 has a stepped profile which includes a skirt 22 that extends from the top edge 24 of the stepped profile to a level which is below the internal bottom surface 26 of the sump 12. The fixing element 20 is in the form of an annular flange 28 which is integrally formed on the bottom edge 30 of the skirt 22 and which extends outwardly at a level which is also below the internal bottom surface 26 of the sump 12.

[0015] The annular flange 28 includes one or more

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openings 32 through which fixing, typically screw-threaded, devices 29 (shown in Figure 5) can be inserted.

[0016] The sump 12 may also include one or more supporting elements 33 (shown in Figure 4) formed on or adjacent to the bottom surface 26 of the sump 12. The supporting elements 33 in use contact a supporting surface on which the trap 10 is mounted and aid in maintaining the structural integrity of the trap 10 when subjected to a downward force, such as that imparted by a person standing on the trap 10.

[0017] The waste water outlet 16 is, typically integrally, formed in a side of the sump 12. This enables the depth of the sump 12 to be reduced. The waste water outlet 16 has an opening 34 (shown in Figure 3) therethrough and is dimensioned to be engagable with a discharge pipe 17, typically as an interference fit. A suitable adhesive may be used to secure the discharge pipe 17 to the waste water outlet 16. The discharge pipe 17 leads to the pump and may be flexible to aid installation.

[0018] The securing means is typically in the form of a clamp element 18 which, in use, seats on a horizontal surface 36 of one of the steps of the stepped profile of the sump 12. The horizontal surface 36 is above the bottom surface 26 of the sump 12. The clamp element 18 is annular and has an upwardly inclined peripheral edge 38 which lies in parallel or substantially in parallel with the inner surface of the skirt 22 of the sump 12. The clamp element 18 also includes an opening 40 which forms part of the waste water inlet 14, and apertures 42 through which fastening, typically screw-threaded, devices 44 can be used to mechanically secure the clamp element 18 with the sump 12.

[0019] The securing means could take the form of a suitable adhesive instead of the clamp element 18. However, in use, the clamp element 18 tends to provide a more positive fixing.

[0020] The pumped trap 10 further includes a removable cap 46 which is received within the clamp element 18 and the sump 12 so that the internal bottom surface 26 of the sump 12 is covered or substantially covered. The cap 46 includes a plurality of apertures 48 which, along with the opening 40 of the clamp element 18, serve to define the waste water inlet 14. The cap 46 also includes one or more apertures 50 through which respective fastening, typically screw-threaded, device 52 can be inserted to secure the cap 46 to the sump 12.

[0021] To install the pumped trap 10 on or in a screed covered concrete floor, it is first decided where the trap 10 should be positioned. The screed at, and in the vicinity of, this position is then removed to a depth sufficient to receive the trap 10 to a level which is below the top surface 54 (see Figure 5) of the pre-existing screed covering 56. Typically, this will entail removing the screed 56 to the level of the concrete floor 58 on which the screed 56 is laid. However, if the screed covering 56 is of insufficient depth, a recess (not shown) may also have to be formed in the concrete of the concrete floor

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[0022] The trap 10 is then positioned within the generated opening and the fixing devices are inserted through the openings 32 in the fixing element 20 and into the concrete floor or the material supporting the trap 10, thereby fixing the trap 10 in place.

[0023] The discharge pipe, connected to the waste water outlet 18, is also positioned within the opening generated by the removed screed, and is connected to the pump which is typically at a position remote from the trap 10.

[0024] The screed covering, indicated at 60, is then re-formed in the opening. During the re-forming, a fall is included towards the trap 10.

[0025] Stiff plastics water resistant material (not shown), typically being for example Altro™, can then be laid over the screed covered floor. The water resistant material is mechanically clamped between the sump 12 and the clamp element 18 by use of the clamp element's fastening devices 44, and cold welded around the edges of the existing floor to create a seamless covering.

[0026] The pump of the trap 10 operates to draw at least a portion of waste water, which enters the sump 12 through the waste water inlet 14, through the opening 34 of the waste water outlet 16 and along the discharge pipe 17 to a drain (not shown). The pump or the discharge pipe 17 typically includes a non-return valve (not shown) to prevent odours backing up through the waste water outlet 16, and the operation of the pump is linked to the operation of, for example, a shower which is to be used in conjunction with the water resistant floor covering.

[0027] The end of the waste water outlet 16 which opens into the sump 12 may also include a partitioning element (not shown), which opens into the sump 12 at a level which is below a level of waste water held in the sump 12. This also aids in the prevention of odours.

[0028] In a modification to the embodiment, the fixing element 20 could be formed at a position which is at the top edge 24 of the sump 12 and/or intermediate the top edge 24 and the bottom internal surface 26. However, as will be apparent, one or more suitable supporting elements (not shown), such as a spacer, may be required between the fixing element 20 and the floor to provide stability.

[0029] In a further modification to the embodiment, the supporting elements 33 could be removed, thereby enabling the bottom surface 26 of the sump 12 to be formed coplanar or substantially coplanar with the fixing element 20.

[0030] It should be realised that the fixing element is not limited to an annular flange 28. The fixing element could also be formed projecting from the external bottom surface 27 of the sump 12, and may not require fixing devices as the re-forming of the screed could be used to cover the fixing element and thereby hold the pumped trap in place.

[0031] A pumped trap can therefore be provided

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which, by the shallow depth of its sump, can be installed within the level of screed covering a concrete floor, and which can be fixed in place at a level which is at or below the level of the internal bottom surface of its sump. It is also possible to generate the fall towards the installed trap without the need for a former.

[0032] The embodiments described above are given by way of example only and various modifications will be apparent to persons skilled in the art without departing from the scope of the invention as defined in the appended claims.

#### Claims

1. A pumped trap for fixing to a floor which includes a screed covering and to which a water resistant floor covering material can be attached, the trap (10) comprising a sump (12), a waste water inlet (14) through which waste water enters the sump (12), a waste water outlet (16), a pump for drawing at least a portion of the said waste water from the sump (12) through the waste water outlet (16), means for securing the floor covering material to the trap (10), and one or more fixing elements (20) by which the trap (10), in use, can be secured to the floor.
2. A pumped trap as claimed in claim 1, wherein the fixing element(s) (20) is/are at a level which is at or below a level of the internal bottom surface (26) of the sump (12).
3. A pumped trap as claimed in claim 1 or claim 2, wherein the one or more fixing elements (20) is/are integrally formed as part of the sump (12).
4. A pumped trap according to any one of the preceding claims, wherein the securing means is in the form of a clamp element (18) by which the floor covering material can be clamped to the trap (10).
5. A pumped trap as claimed in claim 4, wherein the clamp element (18), in use, is secured to the sump (12).
6. A pumped trap as claimed in any one of the preceding claims, wherein the waste water outlet (16) is integrally formed as part of the sump (12).
7. A pumped trap as claimed in any one of the preceding claims, further comprising a removable cap (46) which substantially covers the sump (12).
8. A pumped trap as claimed in claim 7, wherein the removable cap (46) is, in use, secured to the sump (12).
9. A pumped trap according to any one of the preced-

ing claims in combination with a floor covering material, the floor covering material being cold weldable to produce a seamless and water resistant covering.

10. A method for installing a pumped trap as claimed in any one of the preceding claims in a floor having a screed covering, the method comprising the steps of:

- a) removing screed (56) to a depth sufficient to receive the pumped trap (10),
- b) installing the pumped trap (10) in the opening created by the removal of the screed (56) in step (a), and
- c) re-forming the screed covering (60).

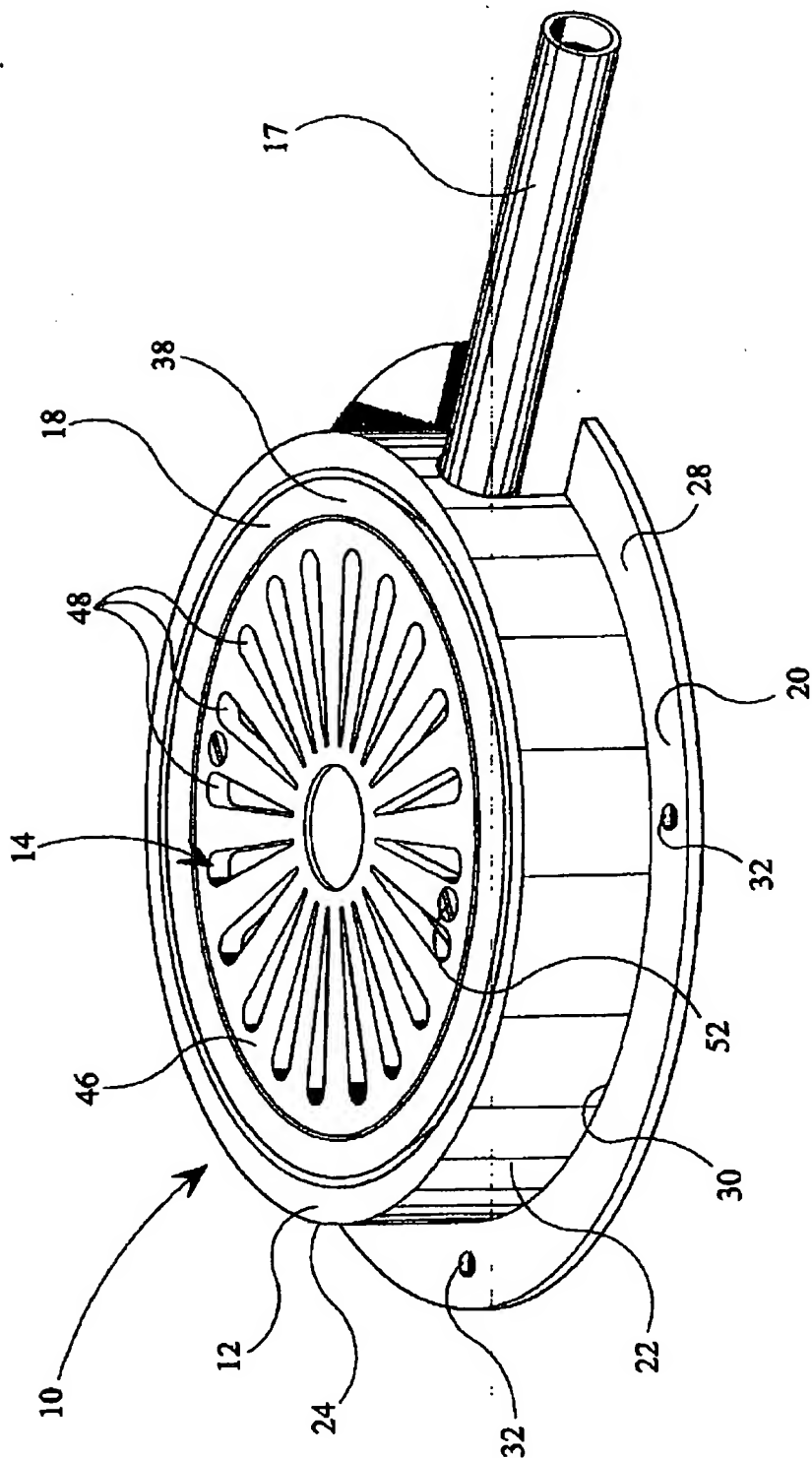
11. A method as claimed in claim 10, wherein the depth of screed (56) removed in step (a) is sufficient to receive the trap (10) to a level which is below the top surface (54) of the pre-existing screed covering (56).

12. A method as claimed in claim 11, further comprising a step (d) between steps (a) and (b) of forming a recess in the floor below the screed (56) to enable the pumped trap (10) to be received to said level.

13. A method as claimed in claim in any of claims 10 to 12, wherein the screed (60) is re-formed in step (c) to include a fall towards the trap (10).

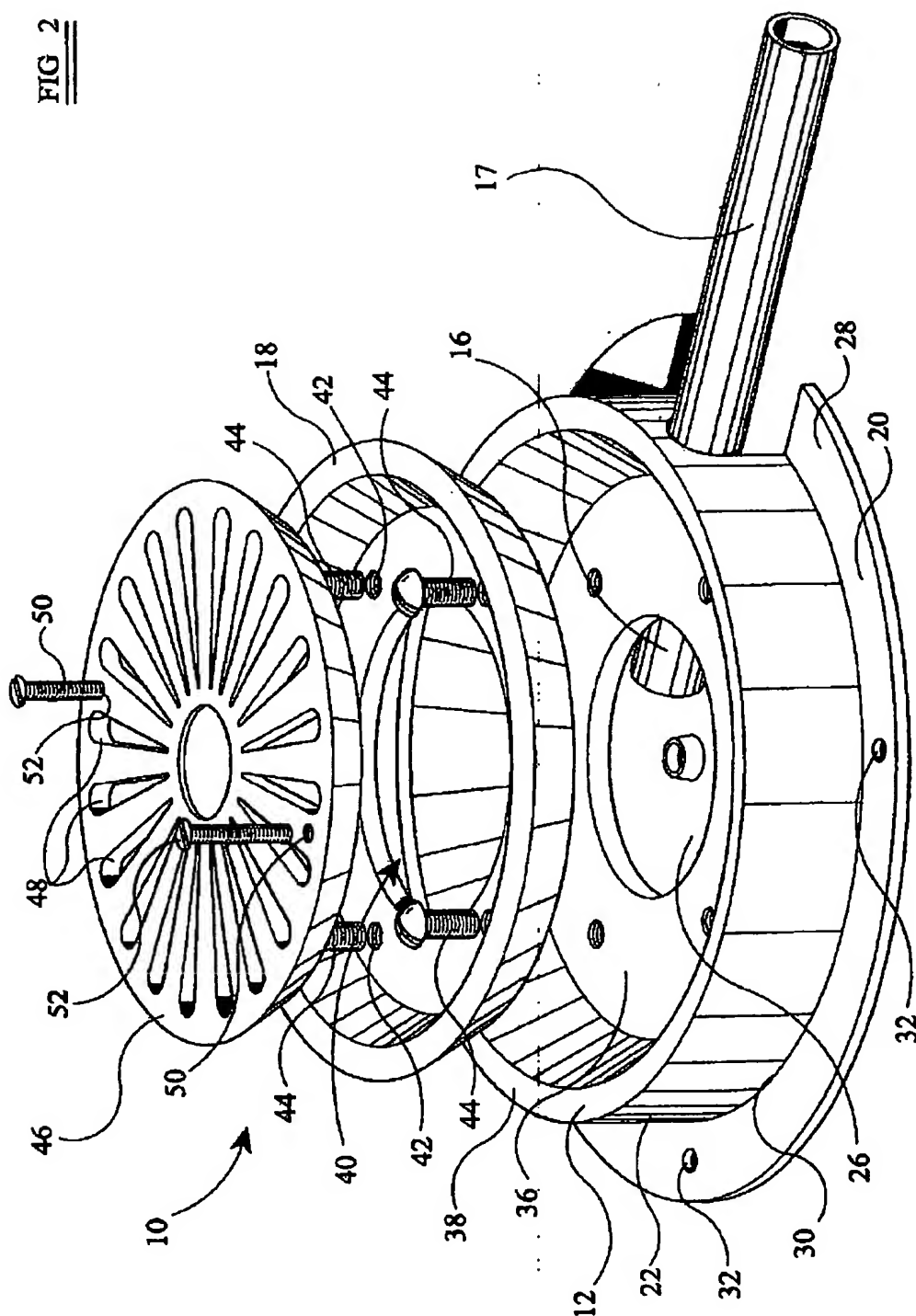
14. A method as claimed in any one of claims 10 to 13, further comprising a step (e) subsequent to step (c) of laying a water resistant floor covering material over the screed (56, 60) and securing it to the pumped trap (10) via the securing means.

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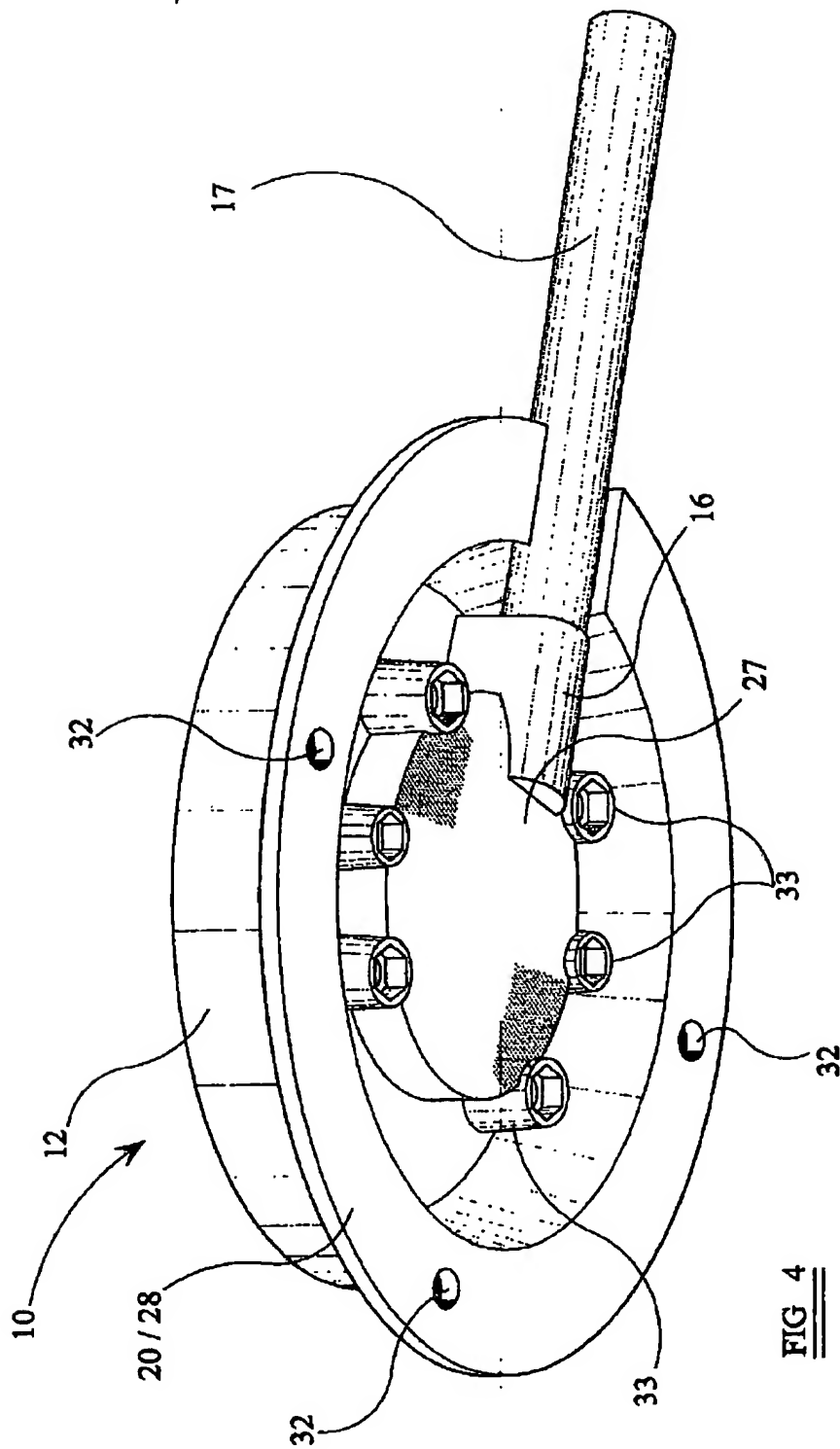
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FIG 2





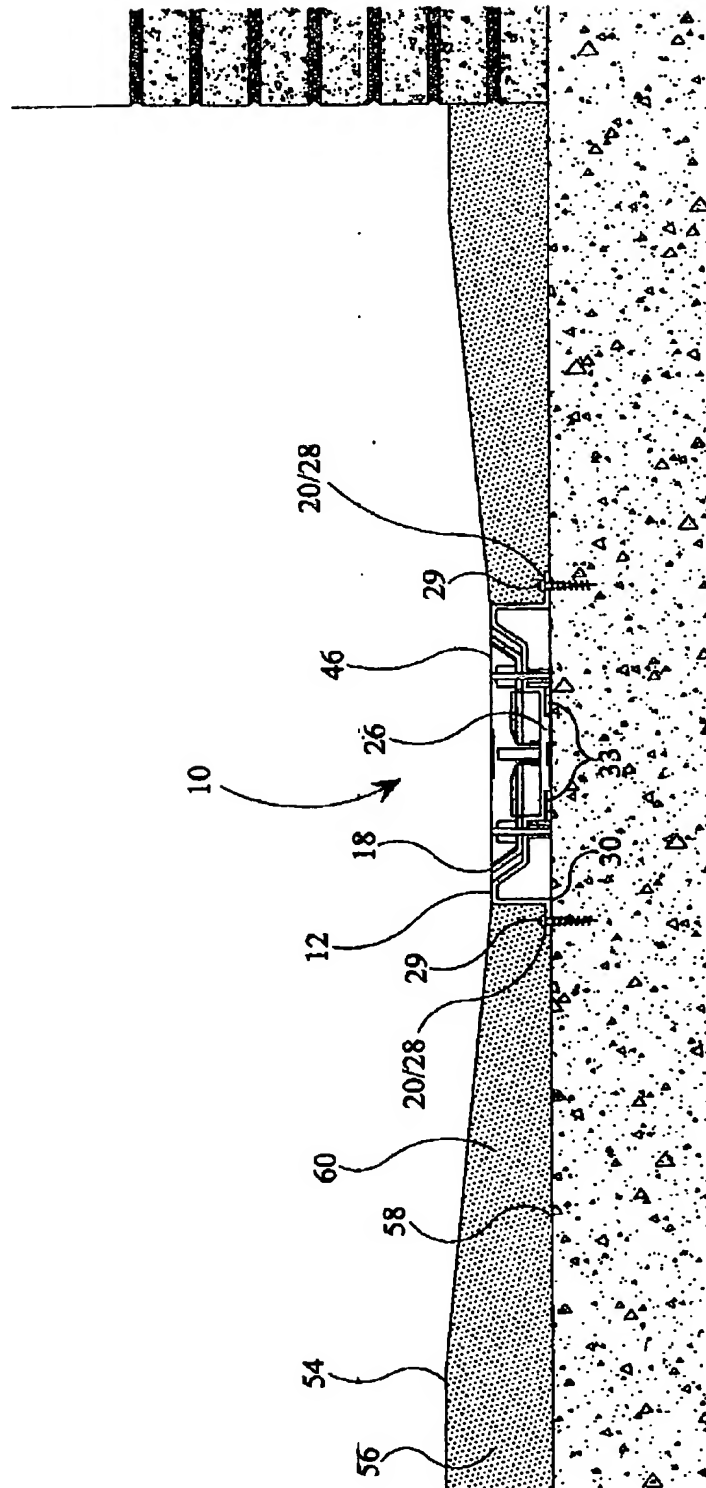
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FIG 5



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